

Question Paper Preview

Notations :

- 1.Options shown in **green** color and with  icon are correct.
- 2.Options shown in **red** color and with  icon are incorrect.

Question Paper Name :

MECHANICAL ENGINEERING 12th May 2025
Shift1

Subject Name :

Mechanical Engineering

Creation Date :

2025-05-12 13:25:58

Duration :

180

Total Marks :

200

Display Marks:

No

Share Answer Key With Delivery Engine :

Yes

Actual Answer Key :

Yes

Change Font Color :

No

Change Background Color :

No

Change Theme :

No

Help Button :

No

Show Reports :

No

Show Progress Bar :

No

MECHANICAL ENGINEERING

Group Number :

1

Group Id :

50696133

Group Maximum Duration :

0

Group Minimum Duration :

180

Show Attended Group? :

No

Edit Attended Group? :

No

Break time :

0

Group Marks :

200

Mathematics

Section Id :

506961126

Section Number :

1

Section type :

Online

Mandatory or Optional :

Mandatory

Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	506961147
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 5069616416 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$ and if $(aI + bA)^2 = A$, then $b^4 =$

Options :

1. ✖ 1

2. ✖ $\frac{1}{2}$

3. ✖ $-\frac{1}{4}$

4. ✔ $\frac{1}{4}$

Question Number : 2 Question Id : 5069616417 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} \cos \theta & \sin \theta & 0 \\ -\sin \theta & \cos \theta & 0 \\ 0 & 0 & 1 \end{pmatrix} = F(\theta)$, then $A^{-1} =$

Options :

1. ✖ $F(\theta)$

2. ✓ $F(-\theta)$

3. ✗ $-F(\theta)$

4. ✗ $-F(-\theta)$

Question Number : 3 Question Id : 5069616418 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If (x, y, z) is the solution of linear equations $x + y + z = 6$,

$x - y + z = 2$, $2x + y - z = 1$, then $\frac{yz}{x} =$

Options :

1. ✗ $\frac{1}{6}$

2. ✗ $\frac{3}{2}$

3. ✓ 6

4. ✗ 3

Question Number : 4 Question Id : 5069616419 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If A and B are square matrices of order 3 with $|A| = 2$, $|B| = -4$, then

$|2AB| =$

Options :

1. ✓ -64

2. ✖ 16

3. ✖ 64

4. ✖ -16

Question Number : 5 Question Id : 5069616420 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $\log_{\sqrt{27}}(x) = \frac{8}{3}$, then $x =$

Options :

1. ✖ 10

2. ✖ 16

3. ✔ 81

4. ✖ 27

Question Number : 6 Question Id : 5069616421 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $\frac{x^3}{(x-1)(x+2)} = Ax + B + \frac{C}{x-1} + \frac{D}{x+2}$, then $C + D =$

Options :

1. ✖ -3

2. ✔ 3

3. ✖ 2

4. ✖ 0

Question Number : 7 Question Id : 5069616422 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\frac{\sin^2 33^\circ - \sin^2 57^\circ}{\sin 21^\circ - \cos 21^\circ} =$$

Options :

1. ✖ $\frac{\sqrt{3}}{2}$

2. ✖ $\frac{1}{2}$

3. ✔ $\frac{1}{\sqrt{2}}$

4. ✖ 1

Question Number : 8 Question Id : 5069616423 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\text{If } A + B = \frac{\pi}{3} \text{ and } \cos A + \cos B = 1, \text{ then } 3\cos(A - B) =$$

Options :

1. ✔ -1

2. ✖

2

3. ✖ -2

4. ✖ 1

Question Number : 9 Question Id : 5069616424 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $2 \tan^{-1} \left(\frac{2}{3} \right) = \tan^{-1}(k)$, then $k =$

Options :

1. ✖ $\frac{5}{12}$

2. ✖ $\frac{4}{3}$

3. ✔ $\frac{12}{5}$

4. ✖ $\frac{3}{4}$

Question Number : 10 Question Id : 5069616425 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\tan^{-1} \left(\frac{1-x}{1+x} \right) = \frac{1}{2} \tan^{-1}(x)$, $x > 0$, then $x =$

Options :

1. ✖

$$\frac{\sqrt{3}}{2}$$

2. ✓ $\frac{1}{\sqrt{3}}$

3. ✗ $\frac{1}{2}$

4. ✗ 1

Question Number : 11 Question Id : 5069616426 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\cosh x = \frac{3}{2}$, then $\cosh 2x =$

Options :

1. ✗ $\frac{1}{3}$

2. ✓ $\frac{7}{2}$

3. ✗ $\frac{5}{2}$

4. ✗ $\frac{11}{3}$

Question Number : 12 Question Id : 5069616427 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\left(\frac{\sqrt{3}+i}{2}\right)^6 + \left(\frac{\sqrt{3}-i}{2}\right)^6 =$$

Options :

1. ✖ 3

2. ✖ -3

3. ✖ 2

4. ✔ -2

Question Number : 13 Question Id : 5069616428 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The distance between the lines $y = 2x + 4$ and $6x - 3y = 5$ is (in units)

Options :

1. ✖ $\frac{13}{2\sqrt{5}}$

2. ✔ $\frac{17}{3\sqrt{5}}$

3. ✖ $\frac{17}{2\sqrt{5}}$

4. ✖ $\frac{14}{3\sqrt{5}}$

Question Number : 14 Question Id : 5069616429 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If the radius of the circle $x^2 + y^2 - 4x + 6y - k = 0$ is 4, then $k =$

Options :

1. ✓ 3

2. ✗ -3

3. ✗ 2

4. ✗ $\frac{1}{2}$

Question Number : 15 Question Id : 5069616430 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If the angle between the lines $3x - 4y + 1 = 0$ and $ax + by - 7 = 0$ is 90° , then $3a - 4b =$

Options :

1. ✗ 12

2. ✗ -1

3. ✓ 0

4. ✗

Question Number : 16 Question Id : 5069616431 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of the tangent to the circle $x^2 + y^2 - 6x + 4y - 12 = 0$ at $(-1, 1)$ is

Options :

1. ✖ $4x + 3y + 1 = 0$

2. ✖ $2x - 3y + 5 = 0$

3. ✖ $2x + 3y - 1 = 0$

4. ✔ $4x - 3y + 7 = 0$

Question Number : 17 Question Id : 5069616432 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The eccentricity of the ellipse whose latus rectum is equal to half of its major axis is

Options :

1. ✖ $\sqrt{3}$

2. ✔ $\frac{1}{\sqrt{2}}$

3. ✖ $\sqrt{2}$

4. ✖ $\frac{1}{\sqrt{3}}$

Question Number : 18 Question Id : 5069616433 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

$$\frac{d}{dx} \left(\sqrt{\sin(x^2)} \right) =$$

Options :

1. ✖ $\frac{x^2 \cos(x^2)}{\sqrt{\sin(x^2)}}$

2. ✖ $\frac{x \cos(x^2)}{2\sqrt{\sin(x^2)}}$

3. ✔ $\frac{x \cos(x^2)}{\sqrt{\sin(x^2)}}$

4. ✖ $\frac{x \sin(x^2)}{\sqrt{\cos(x^2)}}$

Question Number : 19 Question Id : 5069616434 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

$$\frac{d}{dx} \tan^{-1} \left(\frac{\sin x}{1 + \cos x} \right) =$$

Options :

1. ✖ 2

2. ✖ 4

3. ✖ 1

4. ✔ $\frac{1}{2}$

Question Number : 20 Question Id : 5069616435 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If $y^x = x^{\cos y}$, then $\frac{dy}{dx} =$

Options :

1. ✔ $\frac{y(\cos y - x \log y)}{x(x + y \sin y \log x)}$

2. ✖ $\frac{y(\cos y + x \log y)}{x(x + y \sin y \log x)}$

3. ✖ $\frac{y(\cos y - x \log y)}{x(x - y \sin y \log x)}$

4. ✖ $\frac{(\cos y - x \log y)}{(x + y \sin y \log x)}$

Question Number : 21 Question Id : 5069616436 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow 3} \frac{x^2 - x - 6}{x^2 + x - 12} =$$

Options :

1. ✖ $\frac{1}{6}$

2. ✖ $\frac{2}{3}$

3. ✖ $\frac{3}{4}$

4. ✔ $\frac{5}{7}$

Question Number : 22 Question Id : 5069616437 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of the normal to the curve $y = x^3 - 3x$ at the point P(2, 2) is

Options :

1. ✖ $x + 9y - 2 = 0$

2. ✖ $x + 9y - 22 = 0$

3. ✔ $x + 9y - 20 = 0$

4. ✖ $x + 9y - 12 = 0$

Question Number : 23 Question Id : 5069616438 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum value of $y = (x - 1)^2 e^x$ is

Options :

1. ✓ $\frac{4}{e}$

2. ✗ $\frac{2}{e}$

3. ✗ $\frac{1}{e}$

4. ✗ $\frac{9}{e}$

Question Number : 24 Question Id : 5069616439 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $f(x, y) = (x + y)e^{xy}$, then at P(2,2) the value of $\frac{\partial f}{\partial x} =$

Options :

1. ✗ $8e^4$

2. ✗ $4e^4$

3. ✓ $9e^4$

4. ✗ $16e^4$

Question Number : 25 Question Id : 5069616440 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $u(x, y) = \sin^{-1} \left(\frac{x^4 + y^4}{x^2 + y^2} \right)$, then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$

Options :

1. ✖ $2 \cot u$

2. ✔ $2 \tan u$

3. ✖ $2 \sin u$

4. ✖ $2 \cos u$

Question Number : 26 Question Id : 5069616441 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$$\int \frac{1}{(1 - \cos x)} dx =$$

Options :

1. ✔ $-\cot x - \operatorname{cosec} x + c$

2. ✖ $-\cot x + \operatorname{cosec} x + c$

3. ✖ $\cot x - \operatorname{cosec} x + c$

4. ✖ $-\tan x - \sec x + c$

Question Number : 27 Question Id : 5069616442 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_2^4 f(x) dx =$$

Options :

1. ✖ $\int_2^4 f(6+x) dx$

2. ✖ $\int_2^4 f(4-x) dx$

3. ✖ $\int_2^4 f(2-x) dx$

4. ✔ $\int_2^4 f(6-x) dx$

Question Number : 28 Question Id : 5069616443 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_{-1}^1 \sin \pi x dx =$$

Options :

1. ✖ $\frac{1}{\pi}$

2. ✖ $\frac{2}{\pi}$

3. ✓ 0

4. ✗ $-\frac{2}{\pi}$

Question Number : 29 Question Id : 5069616444 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$$\lim_{n \rightarrow \infty} \left[\frac{1}{n} + \frac{n^2}{(n+1)^3} + \frac{n^2}{(n+2)^3} + \dots + \frac{1}{8n} \right] =$$

Options :

1. ✗ $\frac{1}{8}$

2. ✗ $\frac{1}{4}$

3. ✓ $\frac{3}{8}$

4. ✗ $\frac{1}{2}$

Question Number : 30 Question Id : 5069616445 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The area of the region bounded by the lines $x = 1, x = 4, y = 4x$ and $y = x^2$ is

Options :

1. ✗ 2

2. ✖ 6

3. ✖ 16

4. ✔ 9

Question Number : 31 Question Id : 5069616446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

According to Simpson's $\frac{1}{3}$ rule, the value of the integral $\int_1^3 \frac{1}{x} dx$ with $h = \frac{1}{2}$, is

Options :

1. ✖ 1.5

2. ✖ 0.5

3. ✔ 1.1

4. ✖ 2

Question Number : 32 Question Id : 5069616447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The differential equation whose general solution is $y = Ax^2 + Bx$, where A and B are arbitrary constants is

Options :

1. ✖ $x^2 y'' + 2xy' - 2y = 0$

2. ✓ $x^2 y'' - 2xy' + 2y = 0$

3. ✗ $y'' - 2y' + 2y = 0$

4. ✗ $x^2 y'' - 2xy' - 2y = 0$

Question Number : 33 Question Id : 5069616448 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation
 $(e^x + 1)y \, dy + (y + 1) \, dx = 0$ is

Options :

1. ✗ $e^{x-y} = c(y + 1)(1 - e^x)$

2. ✓ $e^{x+y} = c(y + 1)(1 + e^x)$

3. ✗ $e^{2x-y} = c(y + 1)(1 - e^x)$

4. ✗ $e^{x+y} = cy(1 + e^x)$

Question Number : 34 Question Id : 5069616449 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If the differential equation $(x^2 + y^2)dx + kxy \, dy = 0$ is exact, then $k =$

Options :

1. ✓ 2

2. ✖ 1

3. ✖ -1

4. ✖ -2

Question Number : 35 Question Id : 5069616450 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation $\frac{dy}{dx} + y \tan x = \cos^2 x$ is

Options :

1. ✖ $y \cot x = \tan x + c$

2. ✖ $y \sec x = x \sin x + c$

3. ✖ $x \sec x = \sin x + c$

4. ✔ $y \sec x = \sin x + c$

Question Number : 36 Question Id : 5069616451 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The integrating factor of the differential equation $\frac{dy}{dx} + \frac{2x}{x^2+1} y = x^2 + 1$ is

Options :

1. ✖ $2x$

2. ✖ $x^2 + 2$

3. ✔ $x^2 + 1$

4. ✖ $x^2 - 1$

Question Number : 37 Question Id : 5069616452 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation $6y'' - 5y' - 6y = 0$ is

Options :

1. ✖ $y = ae^{9x} + be^{4x}$

2. ✖ $y = ae^{-9x} + be^{-4x}$

3. ✔ $y = ae^{\frac{3x}{2}} + be^{\frac{-2x}{3}}$

4. ✖ $y = ae^{\frac{-3x}{2}} + be^{\frac{-2x}{3}}$

Question Number : 38 Question Id : 5069616453 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particular integral of the differential equation $(4D^2 + 4D - 3)y = e^{3x}$ is

(Here $D \equiv \frac{d}{dx}$)

Options :

1. ✖ $\frac{1}{11}e^{3x}$

2. ✓ $\frac{1}{45}e^{3x}$

3. ✗ $\frac{1}{5}e^{3x}$

4. ✗ $\frac{1}{3}e^{3x}$

Question Number : 39 Question Id : 5069616454 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particular integral of the differential equation

$$(D^2 + 4)y = 5(\cos 3x + \sin 3x) \text{ is}$$

$$\left(\text{Here } D \equiv \frac{d}{dx} \right)$$

Options :

1. ✗ $\cos 3x + \sin 3x$

2. ✗ $\cos 3x - \sin 3x$

3. ✓ $-\cos 3x - \sin 3x$

4. ✗ $\sin 3x - \cos 3x$

Question Number : 40 Question Id : 5069616455 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $L\left\{\int_0^t \cosh 3u \, du\right\} = f(s)$, then $f(4) =$

Options :

1. ✓ $\frac{1}{7}$

2. ✗ $\frac{1}{32}$

3. ✗ 0

4. ✗ $\frac{7}{32}$

Question Number : 41 Question Id : 5069616456 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Let $F(t) = \begin{cases} e^{t-1}, & t > 1 \\ 0, & t < 1 \end{cases}$. If $s > 1$ then $L\{F(t)\} =$

Options :

1. ✗ $\frac{1}{s-1}$

2. ✗ $\frac{e^{-1}}{s-1}$

3. ✓ $\frac{e^{-s}}{s-1}$

4. ✗

$$\frac{e^s}{s-1}$$

Question Number : 42 Question Id : 5069616457 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\infty} t e^{-t} \sin t \, dt =$$

Options :

1. ✖ -1

2. ✔ $\frac{1}{2}$

3. ✖ 0

4. ✖ 2

Question Number : 43 Question Id : 5069616458 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$L^{-1} \left\{ \frac{1}{s(s-1)} \right\} =$$

Options :

1. ✖ $1 - e^t$

2. ✖ $e^t + 1$

3. ✖

$$e^{-t} - 1$$

4. ✓ $e^t - 1$

Question Number : 44 Question Id : 5069616459 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If $L^{-1} \left\{ \frac{s+1}{s^2+2s+2} \right\} = e^{at} \cos bt$, then $a^2 + b^2 =$

Options :

1. ✓ 2

2. ✗ 4

3. ✗ 0

4. ✗ 8

Question Number : 45 Question Id : 5069616460 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

The convolution of the functions 1 and $\sin t$ is

Options :

1. ✓ $1 - \cos t$

2. ✗ $1 - \sin t$

3. ✗

$\cos t$

4. ✖ $1 + \cos t$

Question Number : 46 Question Id : 5069616461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the solution of the initial value problem

$y'' + 9y = 9u(t - 3), y(0) = 0, y'(0) = 0$ (Here $u(t - 3)$ is the unit step function) is

Options :

1. ✖ $\frac{9e^{3s}}{s(s^2 - 9)}$

2. ✖ $\frac{e^{-3s}}{s^2(s^2 + 9)}$

3. ✖ $\frac{9e^{-3s}}{(s^2 + 9)^2}$

4. ✔ $\frac{9e^{-3s}}{s(s^2 + 9)}$

Question Number : 47 Question Id : 5069616462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

$$\int_{-\frac{\pi}{2}}^{\frac{3\pi}{2}} \cos^2 4x \, dx =$$

Options :

1. ✓ π

2. ✗ 3π

3. ✗ 2π

4. ✗ $\frac{\pi}{2}$

Question Number : 48 Question Id : 5069616463 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of a_3 in the Fourier series expansion of the function

$$f(x) = \begin{cases} 0, & -\pi < x \leq 0 \\ x, & 0 < x \leq \pi \end{cases}$$

Options :

1. ✗ $\frac{-2}{\pi}$

2. ✗ $\frac{-2}{3\pi}$

3. ✗ $\frac{-2}{5\pi}$

4. ✓ $\frac{-2}{9\pi}$

Question Number : 49 Question Id : 5069616464 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The value of b_1 in the Fourier series expansion of $f(x) = x \sin x$ in $0 \leq x \leq 2\pi$ is

Options :

1. ✓ π

2. ✗ 2π

3. ✗ 3π

4. ✗ 4π

Question Number : 50 Question Id : 5069616465 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The period of the function $f(x) = \sin\left(\frac{\pi x}{3}\right)$ is

Options :

1. ✗ π

2. ✗ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{6}$

4. ✔ 6

Physics

Section Id :	506961127
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	506961148
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 5069616466 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

Velocity (v) of water waves depends on their Wavelength (λ), Density of Water (ρ) and acceleration due to gravity (g). By the method of dimensional analysis, the relation between these quantities is given by

Options :

1. ✖ v^2 is proportional to $(\rho\lambda g)$

2. ✖ v is proportional to $\lambda g/\sqrt{\rho}$

3. ✔ v^2 is proportional to (λg)

4. ✖ v is proportional to $(\rho\lambda g)$

Question Number : 52 Question Id : 5069616467 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Force $\vec{F} = 2\hat{i} + 3\hat{j} + 7\hat{k}$ newtons (N), acting on an object causes a displacement $\vec{S} = 2\hat{i} + 3\hat{j} + 5\hat{k}$ meters (m). Then the work done is

Options :

1. ✖ 30 Nm

2. ✖ 40 Nm

3. ✔ 48 Nm

4. ✖ 25 Nm

Question Number : 53 Question Id : 5069616468 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\vec{A} = \hat{i} + 2\hat{j} + 3\hat{k}$ and $\vec{B} = 3\hat{i} + 2\hat{j} + \hat{k}$ are the adjacent sides of a parallelogram respectively. The area of the Parallelogram is

Options :

1. ✖ $8\sqrt{2}$

2. ✔ $8\sqrt{3}$

3. ✖ $3\sqrt{8}$

4. ✖ $\sqrt{8}$

Question Number : 54 Question Id : 5069616469 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A block is placed on a rough floor and a horizontal force 'F' is applied on it. The force of friction 'f' by the floor on the block is measured for different values of 'F'. The graph between the 'f' and 'F' would be

Options :

1. ✖ The graph is a straight line of slope 45° for all 'F'
2. ✖ The graph is a straight line parallel to 'F' axis for all 'F'
3. ✔ The graph is a straight line of slope 45° for small values of 'F' and straight line parallel to 'F' axis for large 'F'
4. ✖ The graph is exponential with values of 'F'

Question Number : 55 Question Id : 5069616470 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Throughout the flight of a particle in projectile motion

Options :

1. ✔ The horizontal component of velocity is constant
2. ✖ The vertical component of velocity is constant
3. ✖ The horizontal component of velocity decreases

The horizontal component of velocity is zero

4. ✖

Question Number : 56 Question Id : 5069616471 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A motor cyclist driving with a speed of 0.6 km/minute goes over a turn of radius of curvature 10 m. His slope with vertical in degrees (take $g = 10 \text{ m/sec}^2$).

Options :

1. ✖ 0°

2. ✖ 30°

3. ✔ 45°

4. ✖ 60°

Question Number : 57 Question Id : 5069616472 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two wires of lengths in the ratio 2:3 taken from same material and having the same mass are stretched by same force. Then their elongations are in the ratio of

Options :

1. ✖ 2:3

2. ✖ 3:2

3. ✖ 1:2

4. ✔

Question Number : 58 Question Id : 5069616473 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is wrong?

Options :

1. ✖ Surface Tension of a liquid decreases with increase of temperature
2. ✖ Surface Tension of a liquid increases or decreases depending on the type of impurities added to the liquid
3. ✔ Angle of Contact depends on the inclination of the solid rod placed in the liquid
4. ✖ A drop of oil placed on the surface of water will spread as a thin layer

Question Number : 59 Question Id : 5069616474 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A streamline flow is maintained across the two capillary tubes A and B connected in series. The length of B is twice that of A and the radius of B is half that of A. The pressure across A is P . The pressure across B is

Options :

1. ✖ $4P$
2. ✖ $16P$
3. ✔ $32P$

4. ✖ P/32

Question Number : 60 Question Id : 5069616475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A body of mass 0.1 kg is thrown vertically upward. At a certain point above the ground, the Potential energy and Kinetic energy of the body are 3.7 J and 6.3 J. The maximum height it reaches is ($g=10\text{m/s}^2$)

Options :

- 1. ✔ 10 m
- 2. ✖ 4 m
- 3. ✖ 100 m
- 4. ✖ 0.7 m

Question Number : 61 Question Id : 5069616476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two containers of volumes 20m^3 and 30m^3 have gases at Pressures of 40 MPa and 50 MPa. The two containers are connected by a very narrow pipe of negligible volume and the gases are allowed to intermingle. If the temperature remains constant, the final pressure in MPa is

Options :

- 1. ✔ 46
- 2. ✖ 40
- 3. ✖ 50
- 4. ✖

Question Number : 62 Question Id : 5069616477 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

During an adiabatic process, a mono atomic gas at 27°C is compressed suddenly to $1/8$ of its original volume. Then the Final temperature in $^{\circ}\text{C}$ is (The ratio of the two specific heats of gases = $5/3$)

Options :

1. ✖ 1160

2. ✖ 887

3. ✔ 927

4. ✖ 88

Question Number : 63 Question Id : 5069616478 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The time period of a simple pendulum is 3 sec. Its length is made 4 times.
Then its time period is

Options :

1. ✖ 3 sec

2. ✖ 4 sec

3. ✔ 6 sec

4. ✖ 1.5 sec

Question Number : 64 Question Id : 5069616479 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particle executes Simple Harmonic Motion with an amplitude of 5 cm. When the particle is at 4 cm from the mean position, the magnitude of its velocity in SI units is equal to that of its acceleration. Then, its periodic time in seconds is

Options :

1. ✓ $8\pi/3$

2. ✗ $4\pi/3$

3. ✗ $3\pi/8$

4. ✗ $7\pi/3$

Question Number : 65 Question Id : 5069616480 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The two equations of Simple Harmonic Motions are $Y_1 = 12 \sin(50t + \pi/2)$ and $Y_2 = 12 \sin(50t + \pi/3)$. The phase difference between two motions is

Options :

1. ✗ $\pi/2$

2. ✗ $\pi/3$

3. ✓ $\pi/6$

4. ✗ $\pi/8$

Question Number : 66 Question Id : 5069616481 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Multiple reflections leading to persistence of sound in an auditorium are

Options :

1. ✖ beats
2. ✖ echo
3. ✔ reverberation
4. ✖ stationary waves

Question Number : 67 Question Id : 5069616482 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two sources S_1 and S_2 are moving with certain velocities. The apparent frequencies observed by a stationary observer are double and half of their original frequencies respectively. If the velocity of sound is v and velocity of wind is zero, then the velocities of two sources respectively are

Options :

1. ✖ $v/2$ and $2v$
2. ✖ v and $v/2$
3. ✖ $3v/2$ and $2v$
4. ✔ $v/2$ and v

Question Number : 68 Question Id : 5069616483 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Moment of couple acting on a bar magnet kept at an angle 30° to the direction of uniform magnetic field of induction 2 Tesla is equal to

Options :

1. ✖ Pole Strength of the Magnet
2. ✖ Length of the Magnet
3. ✖ Magnetic Flux
4. ✔ Magnetic Moment of the Magnet

Question Number : 69 Question Id : 5069616484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a Meter Bridge, R_1 and R_2 are the resistances connected in the left and right gaps respectively. The bridge is balanced at the balancing point of 60 cm from left. When a resistance of $30\ \Omega$ is connected in parallel to R_2 , the balancing point shifted to 90 cm. The values of R_1 and R_2 respectively are (in Ω)

Options :

1. ✖ 30 and 50
2. ✖ 200 and 350
3. ✔ 225 and 150
4. ✖ 100 and 75

Question Number : 70 Question Id : 5069616485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When 220 V AC is applied across a step-up transformer, it draws a current of 3A in the secondary. If the number of turns in the primary coil of the transformer is 100 and that of secondary coil is 2000. The output power of the transformer is

Options :

1. ✖ 8800 W
2. ✔ 13200 W
3. ✖ 4400 W
4. ✖ 2200 W

Question Number : 71 Question Id : 5069616486 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A photon of frequency ν is incident on a photosensitive metal surface whose threshold frequency is ν_0 . The kinetic energy of emitted photo electron is

Options :

1. ✖ $h^*\nu$
2. ✖ $h^*\nu_0$
3. ✔ $h^*(\nu - \nu_0)$
4. ✖ $h^*(\nu + \nu_0)$

Question Number : 72 Question Id : 5069616487 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In LASER, the condition of Population Inversion mean

Options :

1. ✖ The number of atoms in the lower energy state are more than the higher energy state
2. ✔ The number of atoms in the higher energy state are more than the lower energy state
3. ✖ The number of atoms in the lower and higher energy states are same
4. ✖ The number of atoms in higher energy state are zero

Question Number : 73 Question Id : 5069616488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a Graded Index Optical Fibre

Options :

1. ✖ The Refractive Index of the core remains constant and will be greater than that of the cladding
2. ✖ The Refractive Index of the core remains constant and will be less than that of the cladding
3. ✖ The Refractive Indices of both core and cladding remain constant and are equal
4. ✔ The Refractive Index of the core varies with maximum at the centre and decreases as the radial distance increases from the axis of the core

Question Number : 74 Question Id : 5069616489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct, if n_e and n_h are the concentrations of the Electrons and Holes respectively

Options :

1. ✓ In an intrinsic semiconductor, $n_e = n_h$ and both these charge carriers contribute to current equally
2. ✗ In p-type semiconductor, $n_e > n_h$ and the current due to electrons is more than that of holes
3. ✗ In n-type semiconductor, $n_p > n_e$ and current due to holes is more than that of electrons
4. ✗ In an extrinsic semiconductor, $n_e = n_h$ and both these charge carriers contribute to current equally

Question Number : 75 Question Id : 5069616490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The semiconductors used for fabrication of visible LEDs have band gap

Options :

1. ✗ Close to 1.5 eV
2. ✗ Close to 1.1 eV
3. ✗ About 1.0 eV to 1.6 eV
4. ✓ About 1.8 eV to 3 eV

Chemistry

Section Id :	506961128
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	506961149
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 5069616491 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

According to Aufbau principle, which orbital is filled immediately after each of the 3p, 4p, 4f and 5d?

Options :

1. ✖ 3d, 5s, 5d, 6p

2. ✖ 3d, 4d, 5d, 6p

3. ✔ 4s, 5s, 5d, 6p

4. ✖ 4s, 5s, 5d, 7s

Question Number : 77 Question Id : 5069616492 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following properties is not due to hydrogen bonding.

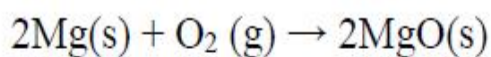
Options :

1. ✖

High boiling point of water

- 2. ✖ High viscosity of glycerol
- 3. ✖ Solubility of ammonia in water
- 4. ✔ Polar nature of halogen acid

Question Number : 78 Question Id : 5069616493 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0



In above reaction equation, the oxidation state of magnesium is changed from

Options :

- 1. ✔ 0 to +2
- 2. ✖ 0 to -2
- 3. ✖ +2 to -1
- 4. ✖ +2 to 0

Question Number : 79 Question Id : 5069616494 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

100 mL of ethanol, whose density is 1.2 g.mL^{-1} is diluted to 1.0 L by addition of distilled water. Molarity of the resultant solution is

Options :

1. ✖ 1.60

2. ✔ 2.60

3. ✖ 0.46

4. ✖ 2.90

Question Number : 80 Question Id : 5069616495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Among the below options, which is not a characteristic of a colloid

Options :

1. ✖ Particle size between $10 \text{ \AA} - 1000 \text{ \AA}$

2. ✖ Heterogeneous

3. ✔ Can be separable by filtration

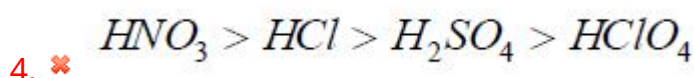
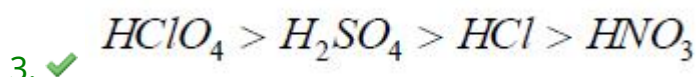
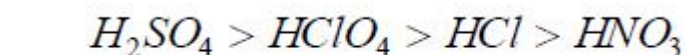
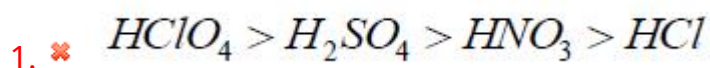
4. ✖ Diffuse slowly

Question Number : 81 Question Id : 5069616496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The correct order of decreasing strength of acids is

Options :



Question Number : 82 Question Id : 5069616497 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The solution which can resist change in its pH on the addition of an acid or a base is known as

Options :

1. ✖ Isotonic solution

2. ✖ Colloidal solution

3. ✖ Neutral solution

4. ✔ Buffer solution

Question Number : 83 Question Id : 5069616498 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The minimum level of a pollutant above which a healthy individual worker is adversely affected on exposure to it for eight hours in a day is called

Options :

1. ✖ Critical Limit Value
2. ✖ Toxic Limit Value
3. ✔ Threshold Limit Value
4. ✖ Dangerous Limit Value

Question Number : 84 Question Id : 5069616499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The consequences of global warming are:

- (A) Increase in average temperature of the earth
- (B) Melting of Himalayan glaciers
- (C) Increased Biochemical Oxygen Demand of natural water
- (D) Eutrophication of water bodies

Choose the correct option.

Options :

1. ✖ A, D
2. ✖ A, C
3. ✔ A, B
4. ✖ A, B, C

Question Number : 85 Question Id : 5069616500 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The chemicals used for defluoridation of water by Nalgonda Technique are

Options :

1. ✖ CaO and CaOCl_2
2. ✔ Alum, CaO and CaOCl_2
3. ✖ CaH_2 , NaOCl and Alum
4. ✖ NaOCl, NaH and Alum

Question Number : 86 Question Id : 5069616501 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process which removes non-ionic, ionic, colloidal and organic matter in water is

Options :

1. ✖ Ion exchange process
2. ✖ Lime soda process
3. ✔ Reverse osmosis process
4. ✖ Zeolite process

Question Number : 87 Question Id : 5069616502 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The set of products that are formed during electrolysis of aqueous solution of KCl between platinum electrodes is

Options :

1. ✖ HCl and KOH
2. ✖ KOH and Cl₂
3. ✔ KOH, Cl₂ and H₂
4. ✖ K and Cl₂

Question Number : 88 Question Id : 5069616503 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When same quantity of electricity is passed through aqueous AgNO₃ and H₂SO₄ solutions connected in series, 5.04×10^{-2} g of H₂ is liberated. What is the mass of silver (in grams) deposited?
(Eq. Wt. of hydrogen and silver is 1.008 and 108 respectively)

Options :

1. ✖ 54
2. ✖ 0.54
3. ✔ 5.4
4. ✖ 10.8

Question Number : 89 Question Id : 5069616504 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Choose the correct option that differentiates metals from non-metals

Options :

Metals form acidic oxides, whereas non-metals form basic oxides.

1. ✖

Metals have a tendency to gain electrons, whereas non-metals have a tendency to lose electrons.

2. ✖

Metals are generally good conductors of electricity, whereas non-metals are insulators.

3. ✔

All metals exist in a solid state at room temperature.

4. ✖

Question Number : 90 Question Id : 5069616505 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Nichrome is commonly used in heating elements because

Options :

It has high electrical conductivity

1. ✖

It has a high melting point and corrosion resistance

2. ✔

It is lightweight

3. ✖

It is brittle and hard

4. ✖

Question Number : 91 Question Id : 5069616506 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ combinations is used for prevention of corrosion.

Options :

1. ✓ Phosphorous or Antimony
2. ✗ Phosphorous or Chlorine
3. ✗ Antimony or Nitrogen
4. ✗ Antimony or Sodium

Question Number : 92 Question Id : 5069616507 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process of coating zinc metal over iron to improve corrosion resistance of iron is called

Options :

1. ✗ Electroplating
2. ✗ Annealing
3. ✓ Galvanizing
4. ✗ Tinning

Question Number : 93 Question Id : 5069616508 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ is a cross linked polymer.

Options :

1. ✓ Bakelite
2. ✗ LDPE
3. ✗ Polystyrene
4. ✗ PVC

Question Number : 94 Question Id : 5069616509 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the Biodegradable polymers from the following and choose the correct option.

(I) PVC (II) PHBV (III) Polypropylene (IV) Nylon-2-nylon-6

Options :

1. ✗ I and II
2. ✓ II and IV
3. ✗ I and IV
4. ✗ I, II and III

Question Number : 95 Question Id : 5069616510 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Calculate the amount of oxygen required for the complete combustion of 1 mole of Methane (CH_4).

Options :

1. ✖ 1 mole
2. ✔ 2 moles
3. ✖ 3 moles
4. ✖ 4 moles

Question Number : 96 Question Id : 5069616511 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ represents the composition of water gas

Options :

1. ✔ $\text{CO} + \text{H}_2$
2. ✖ $\text{CO}_2 + \text{H}_2$
3. ✖ $\text{CO} + \text{CH}_4$
4. ✖ $\text{CO}_2 + \text{CH}_4$

Question Number : 97 Question Id : 5069616512 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the following and choose the correct option.

List – I

List – II

- | | |
|--------------------------------|--|
| a) Hydrogen electrode | (i) $\text{Pt} \mid \text{Fe}^{3+}, \text{Fe}^{2+}$ |
| b) Standard hydrogen electrode | (ii) $\text{Fe} \mid \text{Fe}^{2+}$ |
| c) Metal-metal ion electrode | (iii) pH measurement |
| d) Glass electrode | (iv) $\text{Pt}, \text{H}_2 (2 \text{ bar}) \mid \text{H}^+ (0.1\text{M})$ |
| | (v) $\text{Pt}, \text{H}_2 (1 \text{ bar}) \mid \text{H}^+ (1.0\text{M})$ |
| | (vi) Oxidation electrode |

Options :

1. ✖ a – iii, b – v, c – i, d – vi

2. ✖ a – v, b – iv, c – ii, d – iii

3. ✖ a – v, b – iii, c – i, d – vi

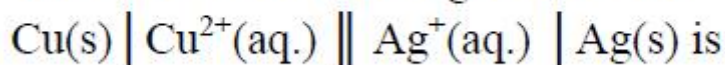
4. ✔ a – iv, b – v, c – ii, d – iii

Question Number : 98 Question Id : 5069616513 Question Type : MCQ Option Shuffling : Yes

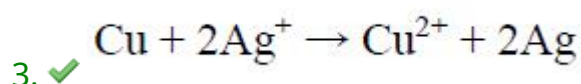
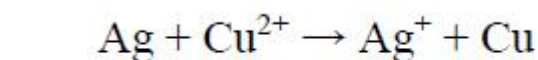
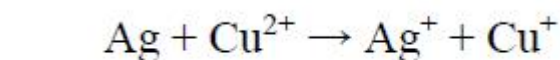
Display Question Number : Yes

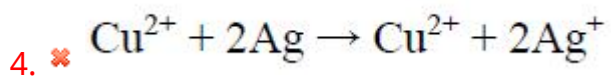
Correct Marks : 1 Wrong Marks : 0

The cell reaction of the galvanic cell



Options :





Question Number : 99 Question Id : 5069616514 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ is used to reduce water pollution.

Options :

1. ✖ Neem
2. ✖ Watermelon
3. ✔ Water hyacinth
4. ✖ People

Question Number : 100 Question Id : 5069616515 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following can cause soil pollution

Options :

1. ✔ DDT
2. ✖ CO_2
3. ✖ NO_2
4. ✖ Nitrogen

MECHANICAL ENGINEERING

Section Id :	506961129
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	506961150
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 5069616516 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In carpentry section for making the cabinet, the strongest form of an angle joint is known as

Options :

1. ✓ Mortise and Tenon joint
2. ✗ Mitre joint
3. ✗ Butt joint
4. ✗ Lap joint

Question Number : 102 Question Id : 5069616517 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A set of reciprocating dies providing radial blows to cause the metal to flow inward and acquire the form of the die cavity, to reduce the diameter is

Options :

1. ✓ Swaging

2. ✖ Extrusion

3. ✖ Piercing

4. ✖ Rolling

Question Number : 103 Question Id : 5069616518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The instrument used to fasten two sheet metals with the steel nail is

Options :

1. ✖ Cutting Pliers

2. ✔ Rivet Pliers

3. ✖ Stapler

4. ✖ Mallet

Question Number : 104 Question Id : 5069616519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The following instrument is used for checking the flatness and squareness of a surface

Options :

1. ✖ Vernier height gauge

2. ✖ Slip gauge

3. ✔

Try square

4. ✖ Bevel gauge

Question Number : 105 Question Id : 5069616520 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Commonly used modern twist drill bits are usually made by ____ material.

Options :

1. ✖ Mild steel

2. ✖ Cobalt steel

3. ✖ Medium carbon steel

4. ✔ High speed steel

Question Number : 106 Question Id : 5069616521 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The volume of the material that does not remain constant during the following entire metal working process is

Options :

1. ✖ Forging

2. ✔ Machining

3. ✖ Rolling

4. ✖ Extrusion

Question Number : 107 Question Id : 5069616522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In _____ metal working process, the material breaks into two parts after the completion of the process.

Options :

1. ✖ Deep drawing
2. ✖ Stretch forming
3. ✔ Shearing
4. ✖ Strain hardening

Question Number : 108 Question Id : 5069616523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The operation of producing diamond shaped pattern on cylindrical external surface on a lathe machine is known as

Options :

1. ✔ Knurling
2. ✖ Grooving
3. ✖ Facing
4. ✖ Finishing

Question Number : 109 Question Id : 5069616524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Low permeability in the sand can majorly cause _____ casting defect

Options :

1. ✖ Misrun
2. ✖ Hot tears
3. ✔ Blow holes
4. ✖ Cold shut

Question Number : 110 Question Id : 5069616525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The flux is added generally in submerged arc welding in the form of

Options :

1. ✔ Granules
2. ✖ Core wires
3. ✖ Coating of the electrodes
4. ✖ Inert gas

Question Number : 111 Question Id : 5069616526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The lip angle of a single point cutting tool is in the range of

Options :

1. ✖ 20° to 40°

2. ✖ 40° to 50°

3. ✔ 60° to 80°

4. ✖ 85° to 90°

Question Number : 112 Question Id : 5069616527 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The relation between the tool life (T) in minutes and cutting speed (V) in m/min is

Options :

1. ✖ $V^n T = C$

2. ✔ $VT^n = C$

3. ✖ $V^n / T = C$

4. ✖ $V / T^n = C$

Question Number : 113 Question Id : 5069616528 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The most preferred process for casting gas turbine blades is

Options :

1. ✖ Die casting

2. ✔ Investment casting

3. ✖ Squeeze casting

4. ✖ Sand casting

Question Number : 114 Question Id : 5069616529 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The consumable electrode is used in

Options :

1. ✖ Carbon arc welding
2. ✖ Laser welding
3. ✖ TIG arc welding
4. ✔ MIG arc welding

Question Number : 115 Question Id : 5069616530 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Down milling is also called as

Options :

1. ✖ Conventional milling
2. ✔ Climb milling
3. ✖ End milling
4. ✖ Face milling

Question Number : 116 Question Id : 5069616531 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In lapping operation, the amount of metal removed is

Options :

1. ✓ 0.005 to 0.01 mm

2. ✗ 1 to 1.5 mm

3. ✗ 1.5 to 3 mm

4. ✗ 0.5 to 1 mm

Question Number : 117 Question Id : 5069616532 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

_____ is a surface finishing operation

Options :

1. ✗ Turning

2. ✓ Honing

3. ✗ Drilling

4. ✗ Milling

Question Number : 118 Question Id : 5069616533 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Ultrasonic machining is best suited for

Options :

1. ✓ Hard and brittle materials

2. ✗ Soft and tough materials

3. ✗ Ductile materials

4. ✖ Malleable materials

Question Number : 119 Question Id : 5069616534 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Jig is

Options :

1. ✔ Used to hold and locate a workpiece and guiding cutting tool
2. ✖ Used to hold and locate workpiece during inspection
3. ✖ An inspection tool
4. ✖ Used to control machining speed

Question Number : 120 Question Id : 5069616535 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

With the use of Jigs and fixture total cost of production

Options :

1. ✖ Increases
2. ✔ Decreases
3. ✖ Remains same
4. ✖ Cannot be determined

Question Number : 121 Question Id : 5069616536 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The resistance of a material to the elastic deformation is called as

Options :

1. ✖ Toughness
2. ✔ Stiffness
3. ✖ Malleability
4. ✖ Resilience

Question Number : 122 Question Id : 5069616537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The unit cell of the Body Centered Cubic (BCC) contains _____ atoms

Options :

1. ✖ 5
2. ✖ 4
3. ✔ 2
4. ✖ 3

Question Number : 123 Question Id : 5069616538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The relation of a set of planes to the axes of the unit cell is designated by

Options :

1. ✖ Atomic structure
2. ✖ Crystal structure

3. ✓ Miller indices

4. ✗ Heyn indices

Question Number : 124 Question Id : 5069616539 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ temperature range is typically maintained in the blast furnace for iron making.

Options :

1. ✗ 600 - 900°C

2. ✗ 100 - 500°C

3. ✓ 1500 - 1700°C

4. ✗ 1900 - 2200°C

Question Number : 125 Question Id : 5069616540 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When the quantity of the carbon content increases then the _____ decreases.

Options :

1. ✓ Ductility

2. ✗ Corrosion resistance

3. ✗ Hardness

4. ✗ Ultimate strength

Question Number : 126 Question Id : 5069616541 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The interstitial solid solution of carbon in gamma iron is called as

Options :

1. ✘ cementite
2. ✘ pearlite
3. ✘ ferrite
4. ✔ austenite

Question Number : 127 Question Id : 5069616542 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The normalizing process for steel is carried out in the temperature range of

Options :

1. ✘ 100 - 200°C
2. ✘ 200 - 300°C
3. ✔ 750 - 980°C
4. ✘ 1200 - 1400°C

Question Number : 128 Question Id : 5069616543 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The process which results in increase of free path of ferrite between carbide particles is

Options :

1. ✖ Full Annealing
2. ✖ Process Annealing
3. ✖ Partial annealing
4. ✔ Spheroidization Annealing

Question Number : 129 Question Id : 5069616544 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Bell metal consists of

Options :

1. ✔ 80% Cu and 20% Sn
2. ✖ 65% Cu and 35% Sn
3. ✖ 60% Cu and 40% Sn
4. ✖ 55% Cu and 35% Sn

Question Number : 130 Question Id : 5069616545 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The purpose of compacting is to _____ the powder into the desired shape.

Options :

1. ✖

sinter

2. ✓ consolidate

3. ✗ mix

4. ✗ blend

Question Number : 131 Question Id : 5069616546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

CAD/CAM is the relationship between

Options :

1. ✗ science and engineering

2. ✗ manufacturing and marketing

3. ✓ design and manufacturing

4. ✗ design and marketing

Question Number : 132 Question Id : 5069616547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Numerical Control comes under _____ category of automation

Options :

1. ✗ Fixed

2. ✗ Flexible

3. ✖ Hydraulic

4. ✔ Programmable

Question Number : 133 Question Id : 5069616548 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following code will give linear interpolation movement?

Options :

1. ✖ G00

2. ✔ G01

3. ✖ G78

4. ✖ G65

Question Number : 134 Question Id : 5069616549 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In Cam software, the primary function of Post processor is to

Options :

1. ✖ Analyse stress and strain of machine part

2. ✖ Convert CAD models into 3D simulation

3. ✔ Translate tool path data into machine specific code

4. ✖ Create and modify the design

Question Number : 135 Question Id : 5069616550 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A simple mechanical arm is an example of _____ generation of robots.

Options :

1.  First
2.  Second
3.  Third
4.  Fourth

Question Number : 136 Question Id : 5069616551 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In _____ organizational structure, grouping the activities is done on the basis of product line.

Options :

1.  Formal
2.  Informal
3.  Functional
4.  Divisional

Question Number : 137 Question Id : 5069616552 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The type of layout which is most suitable for the mass production is

Options :

1. ✖ Process layout
2. ✖ Plant layout
3. ✖ Fixed position layout
4. ✔ Product layout

Question Number : 138 Question Id : 5069616553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A technique that calculates the material requirement and schedule supply to meet changing demand across all products and parts is known as

Options :

1. ✖ Total Quality Management (TQM)
2. ✔ Materials Requirement Planning (MRP)
3. ✖ Production Planning and Control (PPC)
4. ✖ Economic Order Quantity (EOQ)

Question Number : 139 Question Id : 5069616554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The selling price of the product is Rs 7/- per piece while the variable cost is Rs 2/- per piece. If the fixed cost is Rs 40000/-, the quantity of products to achieve the break-even point is

Options :

1. ✖ 20000 units
2. ✖ 5715 units
3. ✖ 4445 units
4. ✔ 8000 units

Question Number : 140 Question Id : 5069616555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What are 6 C's which motivate the entrepreneur to establish their own business?

Options :

1. ✔ Change, Challenge, Creativity, Control, Curiosity and Cash
2. ✖ Customer, Challenge, Creation, Control, Curiosity and Cash
3. ✖ Contact, Connect, Conversion, Culture, Consumption and Community
4. ✖ Commitment, Culture, Continuation, Cooperation, Customer and Control

Question Number : 141 Question Id : 5069616556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The ISO:9000 has an importance to maintain any organization for establishing

Options :

1. ✖ Good number of supplier and buyers
2. ✔ The procedure used for quality control
3. ✖ Sufficient solutions for the causes of variations
4. ✖ The company demand requirements

Question Number : 142 Question Id : 5069616557 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following is one of the criteria for a feasibility study for the given project?

Options :

1. ✖ It does not show the available construction of an industry
2. ✖ The degree of uncertainty
3. ✔ Financial viability and technical requirements
4. ✖ Employee- employer relations

Question Number : 143 Question Id : 5069616558 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The process diagnosis in total quality management system determines

Options :

1. ✖ The top management should talk with vendors

- 2. ✓ Underlying causes of quality issues
- 3. ✗ The workers to do their job effectively
- 4. ✗ The motivation of all the workers

Question Number : 144 Question Id : 5069616559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Industry safety, the term “ergonomics” refers to

Options :

- 1. ✗ The study of economics in the work place
- 2. ✓ The study of people’s efficiency in the work environment
- 3. ✗ The study of insects and other bacterial infections in the work place
- 4. ✗ The study of work place aesthetics

Question Number : 145 Question Id : 5069616560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The factories employing more than 1000 workers should submit their plan for approval to

Options :

- 1. ✗ Chief examiner of the factories
- 2. ✗ Collector of the district
- 3. ✗ Superintendent of Police of the district

4. ✓ Chief Inspector of Factories

Question Number : 146 Question Id : 5069616561 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ is the extensive property of a thermodynamic system

Options :

- 1. ✗ Pressure
- 2. ✓ Enthalpy
- 3. ✗ Temperature
- 4. ✗ Density

Question Number : 147 Question Id : 5069616562 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The state of substance whose evaporation from its liquid state is complete,
is known as

Options :

- 1. ✗ Vapour
- 2. ✓ Perfect gas
- 3. ✗ Air
- 4. ✗ Steam

Question Number : 148 Question Id : 5069616563 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

During iso-choric process, the pressure of the system has been reduced so that the heat rejected from the system is 100 kJ. Then the change in internal energy and work done by the system are

Options :

1. ✖ 0 kJ and 0 kJ
2. ✔ 100 kJ and 0 kJ
3. ✖ 100 kJ and 100 kJ
4. ✖ 100 kJ and 200 kJ

Question Number : 149 Question Id : 5069616564 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In which part of the Carnot cycle does the working substance absorb heat from the hot reservoir?

Options :

1. ✖ During isothermal compression
2. ✔ During isothermal expansion
3. ✖ During adiabatic compression
4. ✖ During adiabatic expansion

Question Number : 150 Question Id : 5069616565 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The efficiency of diesel cycle depends upon

Options :

1. ✖ Temperature limits
2. ✖ Pressure ratio
3. ✖ Fluid pressure
4. ✔ Cut off ratio and compression ratio

Question Number : 151 Question Id : 5069616566 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An open cycle gas turbine works on

Options :

1. ✖ Carnot cycle
2. ✖ Otto cycle
3. ✔ Joule's cycle
4. ✖ Stirling cycle

Question Number : 152 Question Id : 5069616567 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of $\sum \frac{dQ}{T}$ for reversible process is

Options :

1. ✖ Greater than one

2. ✖ Less than one

3. ✔ Equal to Zero

4. ✖ Equal to One

Question Number : 153 Question Id : 5069616568 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The principal constituents of a fuel are

Options :

1. ✔ Carbon and Hydrogen

2. ✖ Oxygen and Hydrogen

3. ✖ Sulphur and Oxygen

4. ✖ Sulphur and Hydrogen

Question Number : 154 Question Id : 5069616569 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If petrol is used in a diesel engine, then

Options :

1. ✖ Engine will not be damaged

2. ✖ Thermal efficiency will be very high

3. ✔ Knocking will occur

4. ✖ There is no effect on Lubrication

Question Number : 155 Question Id : 5069616570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The indicated power and frictional power of a multi-cylinder is generally tested by the following method

Options :

- 1. ✖ Retardation test
- 2. ✖ Indicator diagram test
- 3. ✔ Morse test
- 4. ✖ Wilson line method

Question Number : 156 Question Id : 5069616571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The function of providing clearance volume in reciprocating air compressor is

Options :

- 1. ✖ To reduce the work done per kg of air delivered
- 2. ✖ To increase the volumetric efficiency of compressor
- 3. ✖ To create turbulence in the air to be delivered
- 4. ✔ To accommodate valves in the head to the compressor

Question Number : 157 Question Id : 5069616572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In gas turbine power plants working on Brayton cycle, the temperature at inlet of the turbine is 900 K and at the exit is 500 K. If the mass flow rate of the gas is 4 kg/s, then power developed by turbine if specific heat is 1.0 J/kg K

Options :

1. ✓ 1.6 kW

2. ✗ 400 kW

3. ✗ 4.0 kW

4. ✗ 16 kW

Question Number : 158 Question Id : 5069616573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Thrust augmentation is required in jet engines, in order to meet the requirement of excess power during

Options :

1. ✗ Landing

2. ✓ Take off

3. ✗ Cruising

4. ✗ Travelling

Question Number : 159 Question Id : 5069616574 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a Mollier chart, the temperature point at which solid, liquid and gaseous states may co-exist is known as

Options :

1. ✓ Triple point
2. ✗ Critical point
3. ✗ Boiling point
4. ✗ Melting point

Question Number : 160 Question Id : 5069616575 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A boiler mounting used to put off the fire in the furnace of the boiler when level of water in the drum falls below the unsafe level is

Options :

1. ✗ Stop valve
2. ✗ Blow off cock
3. ✓ Fusible plug
4. ✗ Safety valve

Question Number : 161 Question Id : 5069616576 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equivalent evaporation of a boiler producing 2000 kg/h of steam with enthalpy content of 2426 kJ/kg from feed water at 40°C (liquid enthalpy is 168 kJ/kg, enthalpy of vaporisation at 100 °C is 2258 kJ/kg) is

Options :

1. ✖ 2258 kg/h
2. ✖ 2426 kg/h
3. ✔ 2000 kg/h
4. ✖ 168 kg/h

Question Number : 162 Question Id : 5069616577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The critical pressure ratio of a steam nozzle for the specified expansion index 'n' is given by

Options :

1. ✔ $(2/(n+1))^{(n/(n-1))}$
2. ✖ $(2/(n-1))^{(n/(n+1))}$
3. ✖ $(2/(n-1))^{((n-1)/n)}$
4. ✖ $(2/(n+1))^{((n-1)/n)}$

Question Number : 163 Question Id : 5069616578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For the given steam turbine, if the degree of reaction is zero then there is

Options :

1. ✖ No enthalpy drop in fixed blades
2. ✔ No enthalpy drop in moving blades
3. ✖ No enthalpy drop in both moving and fixed blades
4. ✖ Maximum enthalpy drop in moving blades

Question Number : 164 Question Id : 5069616579 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum efficiency of an impulse turbine in terms of nozzle angle 'α' is given by

Options :

1. ✖ $2 \cos \alpha$
2. ✖ $2 \cos^2 \alpha$
3. ✖ $\cos 2\alpha$
4. ✔ $\cos^2 \alpha$

Question Number : 165 Question Id : 5069616580 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a steam power plant, the condenser is used to condensate the steam that is coming out from the

Options :

- 1. ✖ Nozzle
- 2. ✔ Turbine
- 3. ✖ Boiler
- 4. ✖ Economizer

Question Number : 166 Question Id : 5069616581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The COP of a refrigerating machine working on Carnot cycle that operates between 300K and 250K is

Options :

- 1. ✖ 4
- 2. ✔ 5
- 3. ✖ 6
- 4. ✖ 10

Question Number : 167 Question Id : 5069616582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The denser air system as compared to open air system, for same range of temperature in Bell-Colemann cycle results in

Options :

1. ✖ Lower COP
2. ✔ Higher COP
3. ✖ Same COP
4. ✖ Unpredictable COP

Question Number : 168 Question Id : 5069616583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In P-h diagram of vapour compression refrigeration system, the refrigeration process is shown by

Options :

1. ✖ Straight line with upward slope from left to right
2. ✖ Straight line with downward slope from left to right
3. ✔ Horizontal line
4. ✖ Curve with upward slope from left to right

Question Number : 169 Question Id : 5069616584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following refrigerant is eco-friendly

Options :

1. ✖ Freon -11

2. ✖ Freon – 22

3. ✖ R-12

4. ✔ R-32

Question Number : 170 Question Id : 5069616585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The work input requirement for Ammonia absorption refrigeration cycle is low because

Options :

1. ✖ Ammonia has high thermal conductivity

2. ✖ Ammonia has high latent heat

3. ✖ Ammonia is compressed in gaseous form

4. ✔ Pumping process involves liquid

Question Number : 171 Question Id : 5069616586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The purpose of evaporator in refrigeration equipment is to

Options :

1. ✖ Compress the refrigerant

2. ✔ Absorb heat from surrounding air

3. ✖ Condense the refrigerant

4. ✖ Expand the refrigerant

Question Number : 172 Question Id : 5069616587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The air temperature at which water vapour in the air just starts condensing is

Options :

1. ✖ Dry bulb temperature

2. ✖ Wet bulb temperature

3. ✔ Dew point temperature

4. ✖ Adiabatic temperature

Question Number : 173 Question Id : 5069616588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

On psychometrics chart, relative humidity lines are

Options :

1. ✖ Horizontal

2. ✖ Vertical

3. ✔ Curved

Straight inclined sloping downward to the right

4. ✖

Question Number : 174 Question Id : 5069616589 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

During sensible cooling process, wet bulb temperature

Options :

1. ✖ Remains same

2. ✖ Increases

3. ✔ Decreases

4. ✖ Is unpredictable

Question Number : 175 Question Id : 5069616590 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Outdoor unit of split air conditioner consists of

Options :

1. ✖ Evaporator

2. ✔ Compressor and Condenser

3. ✖ Capillary tube

4. ✖ Compressor only

Question Number : 176 Question Id : 5069616591 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The quantity of liquid flowing per second is constant in _____ flow

Options :

1. ✓ Steady
2. ✗ Streamline
3. ✗ Turbulent
4. ✗ Unsteady

Question Number : 177 Question Id : 5069616592 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Alcohol is used in manometers because

Options :

1. ✗ It has high vapour pressure
2. ✗ It is not volatile
3. ✗ It has low surface tension
4. ✓ It can provide longer column due to low density

Question Number : 178 Question Id : 5069616593 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In case of flow through pipes, the ratio of cross sectional area of flow to wetted perimeter is called

Options :

1. ✖ Friction factor
2. ✔ Hydraulic radius
3. ✖ Coefficient of friction
4. ✖ Dynamic viscosity

Question Number : 179 Question Id : 5069616594 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Fluid flows through a 100 mm diameter tube at a Reynolds number of 1800. The flow is characterized as

Options :

1. ✔ Laminar
2. ✖ Transition
3. ✖ Turbulent
4. ✖ Viscous

Question Number : 180 Question Id : 5069616595 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Bernoulli's equation is applicable for

Options :

- 1. ✖ Viscous and compressible fluid flow
- 2. ✖ Non Viscous and compressible fluid flow
- 3. ✔ Non Viscous and incompressible fluid flow
- 4. ✖ Viscous and incompressible fluid flow

Question Number : 181 Question Id : 5069616596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Negative slip occurs in the reciprocating pumps due to

Options :

- 1. ✖ Short delivery pipe, long suction pipe and running at low speed
- 2. ✖ Long delivery pipe, long suction pipe and running at low speed
- 3. ✔ Short delivery pipe, long suction pipe and running at high speed
- 4. ✖ Long delivery pipe, short suction pipe and running at low speed

Question Number : 182 Question Id : 5069616597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A jet of water of 0.002 m^2 of cross-sectional area moving with a velocity of 15 m/s strikes perpendicular on a series of blades moving with a velocity of 6 m/s . The force exerted on the blades is

Options :

- 1. ✖ 18 N

2. ✖ 27 N

3. ✖ 180 N

4. ✔ 270 N

Question Number : 183 Question Id : 5069616598 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Specific speed of a turbine depends upon

Options :

1. ✖ Speed, power and discharge

2. ✖ Discharge and power

3. ✖ Speed and head

4. ✔ Speed, power and head

Question Number : 184 Question Id : 5069616599 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For flood control and irrigation applications, the pump which is more preferred is

Options :

1. ✖ Centrifugal pump

2. ✖ Reciprocating pump

3. ✓ Axial flow pump

4. ✗ Radial flow pump

Question Number : 185 Question Id : 5069616600 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The turbine which is used for high head and low discharge is

Options :

1. ✗ Kaplan turbine

2. ✗ Francis Turbine

3. ✗ Reaction turbine

4. ✓ Pelton wheel turbine

Question Number : 186 Question Id : 5069616601 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

D' Alembert's principle is used for

Options :

1. ✓ Reducing the problem of kinetics to equivalent statics problem

2. ✗ Determining stresses in the truss

3. ✗ Stability of floating bodies

4. ✗ Solving kinematic problems

Question Number : 187 Question Id : 5069616602 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The ratio of lateral strain to the linear strain within elastic limit is known as

Options :

1. ✖ Young's modulus
2. ✖ Modulus of rigidity
3. ✖ Bulk modulus
4. ✔ Poisson's ratio

Question Number : 188 Question Id : 5069616603 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A steel wire of 8 mm diameter is bent into a circular arc of 16 m radius.
Assuming $E = 2 \times 10^5 \text{ N/mm}^2$, the maximum stress induced in the wire in N/mm^2 is

Options :

1. ✔ 50
2. ✖ 500
3. ✖ 5000
4. ✖ 50000

Question Number : 189 Question Id : 5069616604 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The bending moment diagram for a cantilever beam subjected to bending moment at the end of the beam will be

Options :

1. ✓ Rectangle
2. ✗ Triangle
3. ✗ Parabola
4. ✗ Ellipse

Question Number : 190 Question Id : 5069616605 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Point of contraflexure occurs in

Options :

1. ✗ Simply supported beams
2. ✗ Cantilevers
3. ✓ Overhanging beams
4. ✗ Beams carrying load varying from zero at one end to maximum at other end

Question Number : 191 Question Id : 5069616606 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum deflection in a cantilever of length 'L' due to point load 'P' at its free end is

Options :

1. ✖ $\frac{PL^2}{2EI}$

2. ✔ $\frac{PL^3}{3EI}$

3. ✖ $\frac{PL^2}{8EI}$

4. ✖ $\frac{PL^2}{128EI}$

Question Number : 192 Question Id : 5069616607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum deflection, due to point load 'W' at center of a simply supported beam of length 'L' will be

Options :

1. ✖ $\frac{WL^3}{192EI}$

2. ✖ $\frac{WL^3}{3EI}$

3. ✖ $\frac{WL^3}{2EI}$

4. ✓ $\frac{WL^3}{48EI}$

Question Number : 193 Question Id : 5069616608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A solid shaft can resist a bending moment of 3.0 kNm and a twisting moment of 4.0 kNm together, then the maximum torque that can be applied is

Options :

- 1. ✗ 3 kNm
- 2. ✗ 4 kNm
- 3. ✓ 5 kNm
- 4. ✗ 15 kNm

Question Number : 194 Question Id : 5069616609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The torsional rigidity of a shaft is expressed by

Options :

- 1. ✗ Maximum torque it can transmit
- 2. ✗ Number of cycles it undergoes before failure
- 3. ✓ Torque required to produce a twist of one radian per unit length of shaft
- 4. ✗ Maximum power it can transmit at highest possible speed

Question Number : 195 Question Id : 5069616610 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two solid shafts are made of same material with diameters D and $D/2$.
The ratio of strength of bigger shaft to smaller one in torsion is

Options :

1. ✖ 2

2. ✖ 4

3. ✔ 8

4. ✖ 16

Question Number : 196 Question Id : 5069616611 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which type of screw thread is commonly used in applications requiring a
high load-bearing capacity?

Options :

1. ✖ Unified Thread Standard (UTS)

2. ✔ Square Thread

3. ✖ Metric Thread

4. ✖ V-Thread

Question Number : 197 Question Id : 5069616612 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A toothed wheel of module 6 mm and 50 teeth rotates at 60 rpm. The peripheral speed of gear wheel in m/sec is

Options :

- 1. ✖ π
- 2. ✖ 2π
- 3. ✖ 6π
- 4. ✔ 0.3π

Question Number : 198 Question Id : 5069616613 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which type of coupling is designed to accommodate misalignment between connected shafts?

Options :

- 1. ✖ Rigid coupling
- 2. ✔ Flexible coupling
- 3. ✖ Flanged coupling
- 4. ✖ Fluid coupling

Question Number : 199 Question Id : 5069616614 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A journal bearing is a _____ contact bearing working on the hydrodynamic lubrication and supports load in _____ direction

Options :

1. ✖ Sliding, Axial
2. ✖ Rolling, Axial
3. ✔ Sliding, Radial
4. ✖ Rolling, Radial

Question Number : 200 Question Id : 5069616615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The designation M 33 x 2 of a bolt means

Options :

1. ✖ Metric threads of 33 numbers in 2 cm
2. ✖ Metric threads with cross-section of 33 mm²
3. ✔ Metric threads of 33 mm diameter and 2 mm pitch
4. ✖ Bolt of 33 mm diameter having 2 threads per cm